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ABSTRACT

This study investigated possible relationships between selected teacher candidate characteristics and changes in concerns about teaching reported prior to and following teacher preparation for those candidates successfully entering or failing to enter the teaching profession. A longitudinal sample of 242 teacher candidates reported concerns about self-survival as a teacher, the task of teaching, having a positive impact upon pupils, and concerns about obtaining a teaching position prior to and near the end of teacher preparation, and then seven years after the commencement of teacher preparation these candidates were classified as to the extent of their success in entering the teaching profession. The MANOVA procedures completed with the collected data revealed changes in concerns about teaching during preparation; no differences in teaching concerns between full-time teachers, part-time teachers, and those not teaching; and several statistical interactions. The statistical interactions revealed relationships between the candidates' degree of success in making the transition from students to teachers and the candidates' grade level of instruction, time in preparation, student teaching performance ratings, extent of initial assurance about becoming teachers, Comprehensive Test of Basic Skills scores, and Myers-Briggs personality preferences for one or more of the concerns about teaching scores. (Contains 22 references.) (Author)

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Characteristics Associated with Teacher Attrition: Pre- and Post-Preparation Teaching Concerns of Candidates Teaching or Not Teaching Five Years After Graduation

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Abstract

This study investigated possible relationships between selected teacher candidate characteristics and changes in concerns about teaching reported prior to and following teacher preparation for those candidates successfully entering or failing to enter the teaching profession. A longitudinal sample of 242 teacher candidates reported concerns about self-survival as a teacher, the tasks of teaching, having a positive impact upon pupils, and concerns about obtaining a teaching position prior to and near the end of teacher preparation, and then seven years after the commencement of teacher preparation these candidates were classified as to the extent of their success in entering the teaching profession. The MANOVA procedures completed with the collected data revealed changes in concerns about teaching during preparation; no differences in teaching concerns between full-time teachers, part-time teachers, and those not teaching; and several statistical interactions. The statistical interactions revealed relationships between the candidates' degree of success in making the transition from students to teachers and the candidates' grade level of instruction, time in preparation, student teaching performance ratings, extent of initial assurance about becoming teachers, Comprehensive Test of Basic Skills scores, and Myers-Briggs personality preferences for one or more of the concerns about teaching scores.

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Characteristics Associated with Teacher Attrition: Pre- and Post-Preparation Teaching Concerns of Candidates Teaching or Not Teaching Five Years After Graduation

If teacher quality is to be maintained, the profession needs to attract and retain high quality candidates. Much existing research literature has addressed both the recruitment and attrition of teachers, but relatively little is known about the personal, academic, and teaching concerns characteristics of those individuals who actually enter or do not enter the profession after initial certification as teachers.

Contrary to much of the earlier research of teacher attrition, more recent longitudinal studies have indicated that capable individuals once attracted to the teaching profession are as likely to persist through teacher training (Marso & Pigge, 1991; Pigge & Marso, 1992) and through their early teaching years (Heyns, 1988) as their less capable cohorts. Furthermore, and also contrary to much earlier research suggesting that education has been much less effective than other fields in attracting academically competent individuals to the profession (e.g., Shields & Daniels, 1982), more recent research of the academic ability of those actually entering the teaching field, rather than comparing the ability of high school seniors aspiring to become teachers with those high school seniors aspiring to enter other fields, has revealed much more favorable comparisons between the abilities of those individuals actually becoming teachers and their cohorts actually entering other fields (Book, Freeman, & Brousseau, 1985; Nelson, 1985). It appears that many less able high school students, many of whom never complete college, are more likely to indicate teaching as a potential field than other fields and that some more capable high school students who initially express interest in other fields actually become teachers. For example, Nelson (1985), utilizing data from the National Longitudinal Survey, reported that fewer than 25 percent of the actual teachers had planned to be education majors as seniors in high school, and Lyson and Falk (1984) reported that three-fourths of their sample of high school seniors who had planned to teach were not teaching seven years after their high school graduation.

Fuller's model of the development of teaching concerns, one of the few empirically based models of teacher development (Kagan, 1992), states that one of the indices of the success of a teacher preparation program is the extent to which that program addresses candidates' concerns about teaching (Fuller & Bown, 1975). According to this model of teacher development, teacher candidates pass through three phases of concerns about teaching as they develop as teachers (Fuller, 1969). The very early university experience is characterized as being concerned about the student's own survival as a pupil rather than concerns about teaching. During early teacher preparation, the candidate's focus of concern is centered upon self-survival as a teacher, later in development the focus is upon concerns of performing the actual tasks of teaching, and in mature development the candidate's concerns are upon having a significant, positive impact upon their pupils.

Research of the Fuller model during teachers' preservice development (Adams, Hutchinson, & Mortray, 1980; Adams & Mortray, 1981; Sitter & Lanier, 1982); during teachers' inservice development (Adams, 1982); and during both teachers' preservice and early inservice development (Marso & Pigge, 1989; Pigge & Marso, 1990; Reeves & Kazelskis, 1985; Rogan, Borich, & Taylor, 1992) has generally revealed changes in accord with this theoretical model for the self and task concerns but not for the impact concerns. These studies have revealed decreases in self concerns and increases in task concerns during teacher preparation and the early teaching years and high but relatively stable impact concerns during this period. However, none of the existing research of the Fuller model investigated whether or not teachers' concerns development might be related to teacher candidates' degree of success in making the transition from students to classroom teachers.

The purpose of the present study was to identify possible relationships between the development of teaching concerns during teacher preparation and selected personal and academic attributes for those teacher candidates more or less successful in making the transition from students to

teachers. More specifically, the following questions provided direction for the study: 1) Do those teachers who successfully enter the teaching profession differ from their cohorts who fail to enter the profession in the development of teaching concerns during teacher preparation pertaining to a) concerns about performing as a teacher (task), b) concerns about surviving as a teacher (self), c) concerns about having a positive influence upon their pupils (impact), and d) concerns about becoming employed as a teacher? 2) Are teaching concerns expressed during teacher preparation related to candidate characteristics such as a) gender, b) the time when they decided to become teachers (elementary school, high school, or after high school graduation), c) major (elementary or secondary), d) degree of assurance about their decision to teach, e) academic abilities (American College Test and Comprehensive Test of Basic Skills scores, student teaching performance ratings, and university grade point averages), and f) their personality traits (locus of control orientation and Myers-Briggs personality preferences)? And, 3) Are there statistical interactions between the candidates' degree of success in making the transition from students to teachers and the selected candidate characteristics for the task, self, impact, and jobs concerns reported during teacher preparation?

Methods and Procedures

The longitudinal sample for the study consisted of 242 teachers who began their teacher preparation program at a large midwestern university during 1985. These teachers completed the Teacher Concerns Questionnaire and reported the extent of their concern about successfully obtaining a job as a teacher upon orientation to their first required teacher preparation course and again upon the completion of their student teaching practicum. Seven years after the commencement of teacher preparation, multi-strategy follow-up procedures allowed the researchers to classify each of the individuals as to the success of their transition from students to teachers as follows: 1) presently full-time teachers with two or more years of full-time teaching; 2) presently part-time teachers (e.g., substitute teachers, temporary full-time teacher replacements, etc.) with less than two years of full-time teaching; and 3) certified as teachers but never employed as teachers.

Upon the commencement of teacher preparation these teacher candidates were predominantly female (81%), elementary (57%) and secondary (43%) majors, very certain or almost certain about teaching (88%), from families with teachers in the present or prior generation (60%), children of parent or parents not having four-year college degrees (67%), from somewhat larger families (46% with three or more siblings), second or later birth order (66%), with some or considerable prior teaching-like experiences (73%), confident about becoming unusually good to exceptionally effective future teachers (78%), primarily from rural (33%) or suburban (54%) high schools of moderate to small size (61% with high school graduating classes of 300 or less), and most had decided to teach when in their elementary years (24%) or when in their high school years (50%).

In addition to completing the teaching concerns measure upon entering teacher training, the teacher candidates completed the Comprehensive Test of Basic Skills (CTBS) and reported various personal and family characteristics, such as gender, presence of teachers in immediate family, parental educational level, planned college major, and time at which they had decided to become teachers. Near the end of their student teaching practicum the candidates completed Rotter's Locus of Control (Rotter, 1966) and the Myers-Briggs Type Indicator (Myers & McCaulley, 1985). Upon graduation the American College Test (ACT) scores, university supervisors' ratings of student teaching performance, and university grade point averages were obtained from the records of the candidates. And finally, seven years after the commencement of teacher preparation, through personal and parent contacts, examination of university and alumni records, and reviews of State Department of Education initial and annual certification records, the candidates were classified as full-time teachers, part-time teachers, and nonteachers as previously defined.

The Teacher Concerns Questionnaire was created to facilitate research of the Fuller model of teacher development and provides three concerns scores (self, task, and impact) derived from 15 items responded to on a continuum from not concerned '1' to extremely concerned '5'. The task scale assesses the

testees' concerns about actually performing teaching tasks, the self scale assesses the testees' concerns about surviving as a teacher, and the impact scale assesses the testees' concerns about having a meaningful and positive influence upon pupils. George (1978) reported test-retest reliability for the concerns scales in the .70's and alpha internal consistency coefficients ranging from .67 to .83. He also provided construct validity evidence in the form of significant differences between preservice and inservice teachers' concerns for the self and task scales but not for the impact scale. Additionally, Rogan, Borich, and Taylor (1992) have provided similar further validation of the concerns scales including modest validity evidence for the impact scale.

The confidence about teaching scale consists of a single item regarding candidates' assurance about their decision to be teachers with a five-point continuum response format from very certain '1' to very doubtful '5' about actually teaching. The concern about obtaining a teaching job scale also consists of a single item responded to on a continuum from never '1' to always '5'. The university supervisor's rating of student teacher performance scale consists of six items requiring the supervisors to rate each student teacher relative to all student teachers he/she supervised over the previous five years in six performance categories: quality of content presentation, adequacy of preparation-organization, provision of appropriate learning climate, controlling or managing student behavior, professional knowledge and behavior, and fairness-tact-judgment. Each of these six items is responded to on an eight-step scale from lowest '0' to highest '7', yielding a total score range from zero to 42. The Rotter locus of control measure (Rotter, 1966) provides a single externality score; whereas the Myers-Briggs measure (Myers & McCaully, 1985) provides a dichotomous classification for four preference scales as follows: extraversion-introversion, sensing-intuitive, thinking-feeling, and judging-perceptive. These latter two instruments have been used extensively in research and counseling settings over a period of many years.

The concerns scores were analyzed using a mixed model, two-way multivariate analysis of variance (MANOVA) design. The classification of the candidates' extent of successful transition from students to teachers (full-time, part-time, and nonteachers) described in the preceding paragraphs served as the between subjects factor and the time in preparation (pre- and post-preparation) was the within subjects factor. Significant multivariate F values ($\propto .05$) allowed appropriate follow-up three-way ANOVA univariate analyses and post-hoc comparisons of cell means. These univariate analyses included classifications of the teachers' aforementioned academic and personal characteristics to allow the identification of possible relationships and interactions between time in preparation, the teaching and not teaching status, and the various selected subject characteristics classifications. Tukey/Kramer comparison procedures were employed to reveal pair-wise mean differences and the nature of the interaction effects.

The primary statistical analyses (ANOVA) for this study were those related to three-factor "experiments" with repeated measurements on just one of the factors. The "within subjects" component permitted a determination of whether or not the individuals differed significantly over the two points of time (pre- and post-preparation) with respect to each of the dependent variables (the four concerns scores). The "between subjects" component permitted tests of whether the groupings of teachers relative to the success of their transition from students to teachers (full-time, part-time, and nonteachers) differed relative to the dependent variables. The candidates' specific personal and academic classifications used as "between subjects" analyses were: the four dichotomous preference classifications of the Myers-Briggs (extroversion-introversion, sensing-intuitive, thinking-feeling, and judging-perception); the externality locus of control (high, middle, and low one-thirds) classification; the university grade point average (approximate high, middle, and low one-thirds) classification; the basic academic skills scores (approximate top and bottom halves based upon CTBS composite scores) classification; student teaching performance ratings classification (high, middle, and low approximate one-thirds); the academic aptitude scores (approximate top and bottom one-halves of ACT composite scores) classification; time when the decision to teach was made (elementary grades, high school, and after high school graduation) classification; confidence or assurance about teaching (very certain, certain, and uncertain) classification; presence of teachers in immediate family (yes and no); and

academic major (elementary or secondary) classification. And last, the ANOVA interaction terms permitted determinations as to whether the time in preparation factor and/or the extent of successful transition from students to teachers factor and the various between subjects classifications interacted with each other on the four concerns scales.

Results

The MANOVA procedures revealed a nonsignificant mean difference for the overall extent of successful transition effects (full-time, part-time, and nonteachers) with a Wilk's Lambda F value of 0.79, $p = .612$, and a significant mean difference for overall time effect (pre- to post-teacher preparation) with a Wilk's Lambda F value of 13.79, $p < .0001$. The mixed model three-way ANOVA follow-up procedures were then used to investigate the main effects and potential two-way and three-way statistical interactions for the set of four concerns scores.

As the focus of the present report is upon the relationships between the extent of successful transition from students to teachers and selected candidate characteristics rather than the pre- posttest teacher preparation effects reported elsewhere (e.g., Marso & Pigge, 1989; Pigge & Marso, 1992), just one complete set of 3 x 2 x 2 ANOVA F values, involving the candidates' major classification, is reported for illustrative purposes (see Table 1). Consistent with the MANOVA findings, the between subjects extent of successful transition comparisons revealed no significant mean differences for the self, task, impact, and job concerns. The within subjects time comparisons (pre- and post-preparation) revealed significant differences for the self concerns ($F = 5.75$, $p = .0123$), task concerns ($F = 12.08$, $p = .0006$), and impact concerns ($F = 6.01$, $p = .0150$), but not for the jobs concerns ($F = 1.00$, $p = .3189$). The self concerns and impact concerns decreased during teacher preparation; whereas the task concerns increased during preparation all of which are in accord with the Fuller model.

Insert Table 1 about here

The reduction in impact concerns, although consistent with the Fuller model, is inconsistent with previously noted studies which have reported no change in the impact concerns during teacher preparation. This finding of changes in the impact scores may be a consequence of having excluded in the present study those candidates who did not become certified following teacher preparation (i.e., the researchers studied the transition of just certified candidates). These noncertified candidates would have been made up of both those candidates ineligible for certification as teachers for whatever reasons and of those for whatever reasons who did not choose to become certified as teachers.

Collectively, the candidates' academic and personal characteristics main effects revealed significant differences for the gender, ACT, Myers-Briggs, student teaching performance ratings, and university grade point averages classifications (see Table 2) but not for the locus of control, time of decision to teach, assurance about teaching, presence of teachers in family, and academic major classifications. These main effects revealed that the female teacher candidates, those with high ACT scores, and those with middle and low university grade point averages reported more concern about actually getting a teaching job than did their male, low ACT scores, and high university grade point average cohorts. Similarly, the Myers-Briggs extrovert and perceptive preference types reported more concern about their impact upon pupils than did their introverted and judging cohorts. And, the candidates with highest student teaching performance ratings reported less concern about self survival concerns than did their cohorts with mid and low performance ratings.

Insert Table 2 about here

And most central to the purpose of the present study, the various three-way ANOVA procedures resulted in the identification of eight statistical interactions involving the extent of successful transition from students to teachers factor. Three of these interactions were three-way interactions and the remaining five interactions were two-way interactions as identified in Table 3. The following candidate classifications did not interact with the success of transition factor for any of the four concerns dependent variables: levels of ACT scores, time of first interest in teaching, presence of teachers in family, and locus of control orientation.

Insert Table 3 about here

Extent of Transition x Candidate Classification Interactions

The five statistically significant two-way interactions between the extent of successful transition from students to teachers factor and candidate personal or academic classifications included the candidates' academic major (elementary and secondary), the levels of CTBS scores, and two Myers-Briggs personality preferences. The exteht of transition x major statistical interaction occurred with the task scores ($F = 3.04$, $p = .0499$). This interaction indicates that the two elementary grade level candidate groups who were teaching (full-time and part-time) reported more concern about the task of teaching during preparation than did the full- and part-time secondary teaching groups; whereas, in contrast, elementary candidates not teaching reported much less concern about the task of teaching than did their elementary teaching cohorts and the secondary candidates not teaching reported much higher task concerns than did their secondary teaching cohorts (see Figure 1).

Insert Figure 1 about here

A second extent of transition x major interaction occurred with the self concerns and revealed a pattern of means similar to that of the elementary and secondary candidates for the tasks concerns just described although not as pronounced ($F = 3.13$, $p = .0456$). Namely, the part-time and full-time elementary teachers reported higher self survival as teachers concerns during preparation than did part-time and full-time secondary teachers but the secondary majors not teaching reported higher self-survival concerns than did the elementary majors not teaching (see Figure 2). Collectively, these first two interactions seem to suggest that the secondary candidates not teaching, but not the elementary candidates not teaching, may have chosen not to teach because of more intense task and self-survival concerns than their respective secondary and elementary cohorts.

Insert Figure 2 about here

The third two-way statistical interaction was for the self concerns scores and involved the extent of successful transition groups and the CTBS scores classification ($F = 3.26$, $p = .0400$). The full-time teachers with lower CTBS scores reported higher self-survival concerns during teacher preparation than did any of their elementary and secondary cohorts regardless of transition status. Additionally, the candidates with part-time teaching experience with low CTBS scores reported somewhat lower self concerns during preparation than their part-time cohorts with higher CTBS scores; whereas the low CTBS nonteachers reported somewhat higher self concerns during preparation than the high CTBS nonteachers (see Figure 3). In particular, this pattern of means reveals that those candidates among the most successful in their transition to teaching (i.e., full-time teachers) with low CTBS scores had expressed much higher self survival scores during teacher preparation than had all other of their cohorts. The CTBS levels revealed relatively very little difference in the part-time and

the not teaching groups but revealed a dramatic difference in the full-time teachers group. One possible interpretation of this interaction would be that members of this group (low CTBS score individuals who later became full-time teachers) were more aware of their somewhat limited academic skills in the past and felt that this limitation might impact upon their performance as future teachers but those who became part-time teachers with the lower CTBS scores were not as aware of their limitations or did not feel their limited academic skills would be a problem to them as teachers.

Insert Figure 3 about here

The fourth and fifth two-way statistical interactions were between the extent of successful transition groups and the Myers-Briggs sensing-intuitive (S-N) classification for the self and impact concerns scores. Those part-time teachers classified as intuitive (individuals who would rather look for possibilities and relationships than work with known facts) reported lower self-survival as a teacher concerns as compared to their part-time teaching cohorts classified as sensing, but just the opposite was true of their nonteaching cohorts with the sensing nonteachers reporting higher self concerns than their intuitive nonteaching cohorts ($F = 3.49$, $p = .0326$). Concomitantly it can be said of this interaction that the sensing-intuitive classification revealed major differences in candidates' concerns about survival as a teacher during preparation for those candidates later becoming nonteachers and part-time teachers, but revealing little or no difference for those candidates making a successful transition to full-time teaching (see Figure 4).

Insert Figure 4 about here

The extent of successful transition x sensing-intuitive interaction for the impact concerns ($F = 3.06$, $p = .0490$) reveals a pattern of means similar to that of the just described extent x S-N interaction for the self concerns (see Figure 5). The intuitive part-time teachers reported lower impact concerns than their part-time sensing cohorts, and just the opposite was true for the nonteaching group. In general, these two interactions with the Myers-Briggs sensing-intuitive classification suggest that intuitive and sensitive individuals most successful in their transitions to teaching (e.g., full-time teachers) had similar levels of self and impact concerns but their nonteaching and part-time teaching cohorts had reported very dissimilar levels of self and impact concerns during teacher preparation (see Figures 4 and 5). It appears from these two interactions that the intuitive teacher candidates with high self and impact concerns and sensitive individuals with low self and impact scores are less likely to become teachers.

Insert Figure 5 about here

Extent of Transition x Time in Preparation x Candidate Classification Interactions

The three significant three-way statistical interactions between the extent of successful transition x time in preparation x candidate characteristics involved the judging-perceptive classification of the Myers-Briggs, degree of assurance about becoming teachers, and ratings of student teaching performance classifications for the self and impact concerns scores. Each of these three-way interactions, of course, reflect the significant main effect time in preparation, namely, both the impact and self scores decreasing from pre- to post-preparation. The three-way interaction for the self concerns scores was an extent of successful transition x time x judging-perceptive (J-P) interaction ($F = 6.06$, $p = .0028$). The major interpretations of this interaction appeared to be that: 1) the full-time teachers with a judging preference (liking a planned, orderly versus a flexible, spontaneous way of life) reported

similar levels of pretest and posttest self survival as a teacher concerns; whereas the full-time perceptive teachers reported a dramatic decline from very high initial to very low end of teacher preparation self concerns; 2) the nonteaching perceptive and judging candidates both reported reductions in self concerns during preparation with the perceptive types reporting much higher levels of self concerns at both points in teacher preparation; 3) and the part-time teachers with the judging preference also reported lower self posttest scores than pretest scores, but the part-time teachers with the perceptive preference showed increased levels of self concerns at the end of teacher preparation compared to the commencement of preparation (see Figure 6). The major interactive factor here suggests that the perceptive teacher candidates who later become full-time teachers have very intense self concerns upon commencement of teacher preparation but low levels of self concern after training; whereas those perceptive candidates later not becoming teachers reported high levels of self concerns both prior to and following teacher preparation.

Insert Figure 6 about here

The second and third three-way interactions involved the impact concerns scores. Figure 7 shows the extent of transition x time x assurance interaction and indicates that the part-time and full-time teachers reported greater diversity in concerns about their impact upon pupils during teacher preparation than did the nonteachers with much of that greater diversity resulting from candidates uncertain about their decision to teach. The main effect of a reduction in pretest to posttest impact concerns is readily evident in this figure; the part-time and full-time teachers who were least assured about their decision to teach at the commencement of training reported the lowest levels of impact concerns after preparation as teachers; and the third major pattern evident in this interaction appears to be that those sophomore candidates certain about teaching who later became part-time teachers reported the highest level of impact scores and the certain about teaching sophomore candidates who later were full-time teachers or nonteachers reported the lowest levels of impact scores compared to the other sophomore candidates (see Figure 7). Theoretically high levels of impact concerns are considered desirable, and those full-time teachers very certain about teaching tended to report higher pre- and posttest levels of impact concerns and those uncertain about teaching tended to report lower levels of impact concerns.

Insert Figure 7 about here

The last of the three-way interactions was an extent of transition x time x student teaching performance rating interaction also for the impact concerns scores (see Figure 8). The general pattern of means for this interaction suggests lower pretest impact concerns for the candidates who later earned high student teacher performance ratings and became part-time and full-time teachers and, of course, the main effect of lower impact concerns near the end of teacher preparation as compared to prior to teacher preparation. Additionally, the impact concerns scores reveal a high diversity of means for the three successful transition groups and more diversity among the senior scores for the nonteachers than for the full-time and part-time teachers. The full-time teachers as seniors reported higher impact scores than the part-time teachers. With the exception of the nonteaching seniors with highest student teaching ratings, the nonteaching group reported similar pre- to posttest impact scores. Again at these two points in teacher development, theoretically one would want candidates to have relatively high levels of concern about their impact upon pupils.

Insert Figure 8 about here

Summary and Discussion

The MANOVA and ANOVA procedures completed on the task, self, impact, and jobs concerns scores revealed significant main effect differences for the pre- to post-preparation factor but not for the extent of successful transition from students to teachers factor. In other words, changes in teaching concerns did occur during teacher preparation but the levels of concerns did not differ among the candidates later classified as full-time teachers, part-time teachers, and nonteachers. The time main effect differences revealed pre- to post-teacher preparation decreases in self-survival as teachers concerns and impact upon pupil concerns, an increase in concerns about the task of teaching, and no change in concerns about getting a job as teacher. Candidate personal or academic characteristics main effect differences were identified for the ACT, Myers-Briggs, student teaching performance ratings, gender, and the university grade point averages classifications for the jobs, self, and impact but not task concerns. The analyses also revealed several significant statistical interactions involving the levels of successful transition from students to teachers with candidate personal-academic classifications and/or time in teacher preparation. The teacher candidate classifications interacting with the success in transition groups were student teacher performance ratings, degree of assurance about becoming a teacher reported prior to teacher preparation, academic major (elementary or secondary), levels of basic academic skills measured by the Comprehensive Test of Basic Skills, and two Myers-Briggs personality preferences (sensing-intuitive and judging-perceptive). The job concerns scale showed no significant time or extent of successful transition main effects or interactions, but job concerns was found to be related to the candidates' gender, ACT scores, and university grades. Those candidates with higher grades and ACT scores and the male candidates reported less concern about getting a teaching job. The task, self, and impact concerns scores each revealed one or more statistically significant statistical interactions. In addition, the candidates classified as extroverted and perceptive by the Myers-Briggs scale reported more concern about their impact upon pupils than did their introverted and judging cohorts, and the teacher candidates with mid or low student teaching performance ratings reported more self concerns than their high rated cohorts.

As the focus of the present paper was upon investigating the possible relationships between the extent of candidates' transition from students to teachers and either changes in concerns during teacher preparation or candidates' personal and academic characteristics, just those interactions involving these factors were presented and discussed. Several of the possible interpretations from these interactions as well as from salient related pre- to post-teacher preparation main effects follow:

1. Changes in the candidates' concerns during teacher preparation were identified and appeared to be consistent with the Fuller model. Namely, self and impact concerns decreased; whereas task concerns increased. Prior studies, as previously noted, have not commonly found changes in impact scores during teacher preparation, and this result may have been influenced by the sample formation in the present study as just those candidates completing their teacher education program and successfully becoming certified as teachers were included in the sample.

2. Teacher candidate academic performance indices (e.g., grade point average, CTBS, ACT and student teaching performance ratings) are not consistently related in the same direction to reported levels of concerns about teaching. For example, candidates with high grades reported more concern about getting a job as a teacher than did their cohorts with lower grades; whereas those with higher ACT scores reported less concern about getting a job than did those with lower ACT scores. Other researchers have also noted this distinction between teachers' grade point averages in contrast to their standardized test performance. For example, Heyns (1988) reported that persisting teachers earned higher university grades but scored lower on standardized tests as compared to their nonpersisting cohorts.

3. The identification of several statistical interactions in the present study involving the task, self, and impact concerns associated with the Fuller model clearly indicates that changes in teaching concerns are related to candidate characteristics and abilities as well as with

experiences encountered during teacher preparation and, thus, the model probably ought to be modified accordingly.

4. The statistical interactions identified in the present study suggest that experiences encountered during teacher preparation may have rather different impacts upon teaching candidates; therefore suggesting and that some candidates may require alternate preservice experiences to better facilitate their development as teachers. For example, perceptive candidates later becoming part-time teachers reported more self concerns following preparation than prior to teacher preparation.

5. The secondary candidates who did not become teachers, despite being certified as teachers, may have chosen not to teach because of high levels of concerns about performing the tasks of teaching and about self-survival as teachers. This suggests that secondary preservice programs might be better designed to address these types of concerns.

6. Limits in candidates' basic academic skills may lead to higher levels of self-survival concerns among those candidates who later become full-time teachers and among candidates who choose not to teach. In contrast, those candidates with lower academic skills who become part-time teachers seem not to be aware of or at least seem not to feel those limitations will have a negative impact upon their survival as teachers.

7. Teacher candidates classified as Myers-Briggs' intuitive types and who express high levels of concerns about self-survival as teachers (i.e., individuals who would rather work with known facts than look for possibilities and relationships) are more likely to not teach as compared to their cohorts classified as sensing.

8. Teacher candidates classified as Myers-Briggs' intuitive types (i.e., individuals who would rather work with known facts than look for possibilities and relationships) and who express very high or very low levels of concerns about their impact upon pupils are more likely than their sensing cohorts to not teach.

9. Teacher candidates classified as perceptive (i.e., preference for a flexible, spontaneous way of life rather than a planned, orderly way) and who report a dramatic decrease or report no change whatsoever in self concerns during teacher preparation as compared to cohorts showing modest change are more likely to become full-time teachers than their cohorts classified as having a judging preference.

10. Teacher candidates who were uncertain about becoming teachers at the commencement of teacher preparation and who report high levels of concern about their impact upon pupils are more likely to not teach than other candidates.

11. Teacher candidates with high student teacher performance ratings who reported high levels of impact concerns as sophomores but low levels upon completion of teacher preparation are more likely to not teach than their cohorts showing little or moderate change in impact concerns during teacher preparation.

12. Teacher candidates with low student teaching performance ratings who reported little concern about their impact upon pupils as sophomores and as seniors report increased rather than decreased levels of impact concerns after teacher preparation are more likely not to become teachers.

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Table 1

Univariate 3 x 2 x 2 ANOVA Repeated Measures Mixed Model F Values for Extent of Successful Transition from Students to Teachers, Time in Preparation, and Major

A. Between Subjects Comparisons

Concerns Scale	Overall Means: Extent of Transition: Low Tchng	High Tchng	No Tchng	F	p	Major: Elem.	Sec.	F	p	Extent x Major: F	p
Self	15.31	16.26	15.61	2.24	.1086	15.91	15.58	1.18	.2786	3.13	.0456
Task	12.57	12.32	12.38	0.02	.9836	12.45	12.36	0.14	.7115	3.04	.0499
Impact	17.61	18.43	17.97	0.84	.4340	18.00	18.09	0.00	.9926	0.21	.8122
Job	3.27	3.46	3.36	1.31	.2722	3.46	3.25	3.52	.0619	0.68	.5099

B. Within Subjects Comparisons

Concerns Scale	Overall Means: Time: Soph.	Senior	F	p	Time x Extent: F	p	Time x Major: F	p	Time x Extent x Major: F	p
Self	16.26	15.27	5.75	.0173	0.20	.8187	5.50	.0199	0.20	.8201
Task	11.91	12.91	12.08	.0006	0.65	.5244	1.94	.1648	0.72	.4874
Impact	18.49	17.59	6.01	.0150	0.39	.6777	3.55	.0608	0.25	.7816
Job	3.31	3.43	1.00	.3189	0.58	.5595	0.20	.6572	2.61	.0757

Table 2

Statistically Significant ANOVA Main Effects F Values for the Teacher Candidates' Classifications

Subject Classification	Concerns Scale	Means			F	p
		Male		Female		
Gender	Job	3.03		3.44	7.26	.0076
		21 plus		20 Less		
ACT	Job	3.68		3.29	5.97	.0157
		Extrovert		Introvert		
Myers-Briggs	Impact	18.63		16.52	11.24	.0010
		Judging		Perceptive		
Myers-Briggs	Impact	17.62		19.03	5.15	.0243
		Hi	Mid	Lo		
Student Teaching Rating	Self	15.15	16.46	16.04	3.83	.0232
		Hi	Mid	Lo		
University GPA	Job	3.09	3.39	3.70	5.29	.0058

Table 3

Statistically Significant Two- and Three-Way ANOVA Interactions Involving the Extent of Successful Transition from Students to Teachers Factor

Subject Classification	Concerns Scale	Interaction	F	p	Figure Number
Major	Task	Extent x Major	3.04	.0499	1
	Self	Extent x Major	3.13	.0456	2
CTBS	Self	Extent x CTBS	3.26	.0402	3
Myers-Briggs	Self	Extent x S-N	3.49	.0326	4
	Impact	Extent x S-N	3.06	.049	5
	Self	Extent x Time x J-P	6.06	.0028	6
Assurance	Impact	Extent x Time x Assurance	2.35	.0548	7
Student Teaching Rating	Impact	Extent x Time x Student Teaching Rating	3.28	.0122	8

Figure 1

Dependent Variable Task: Extent of Transition x Major

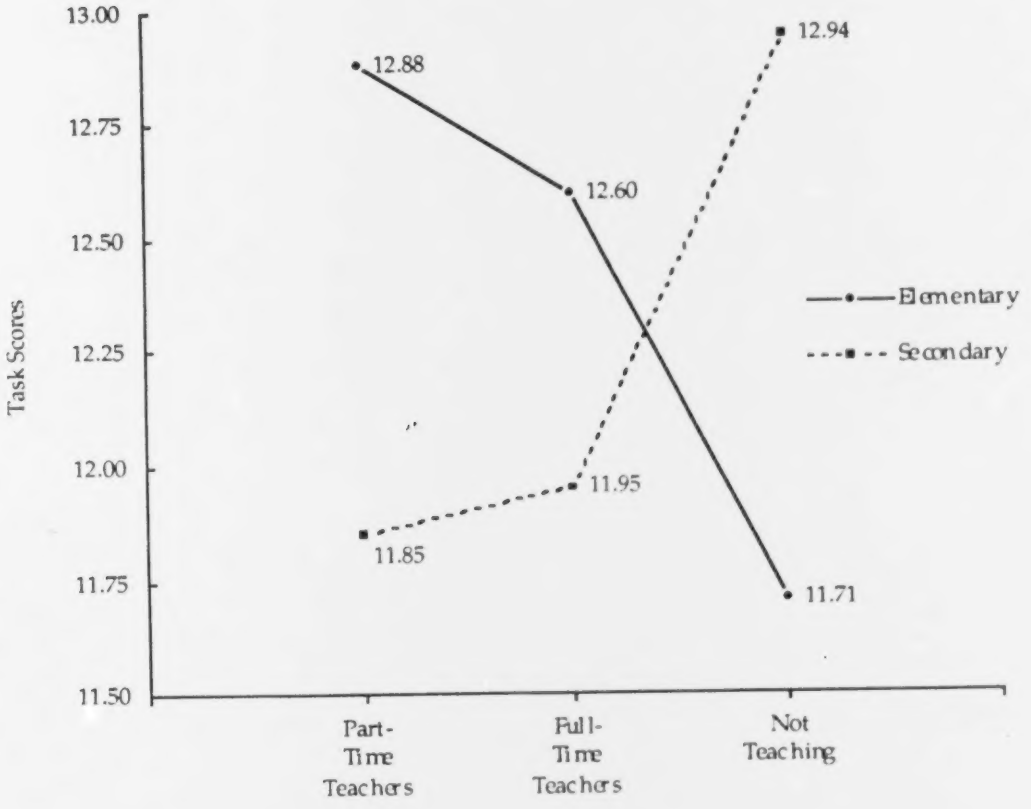


Figure 2

Dependent Variable Self: Extent of Transition x Major

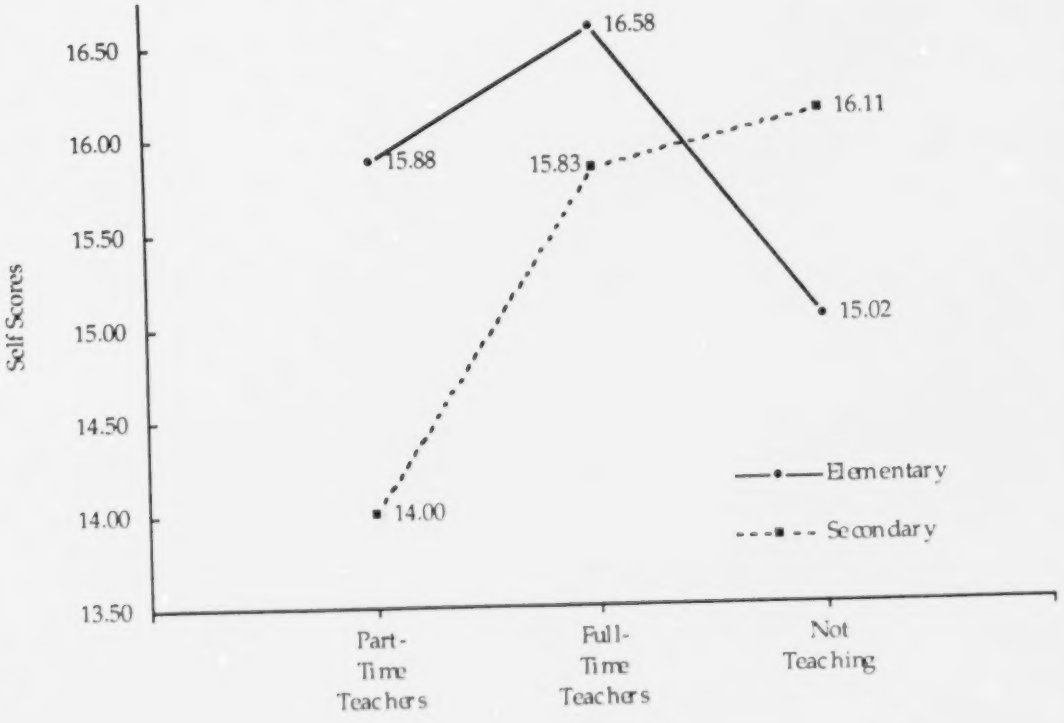


Figure 3

Dependent Variable Self: Extent of Transition x CTBS

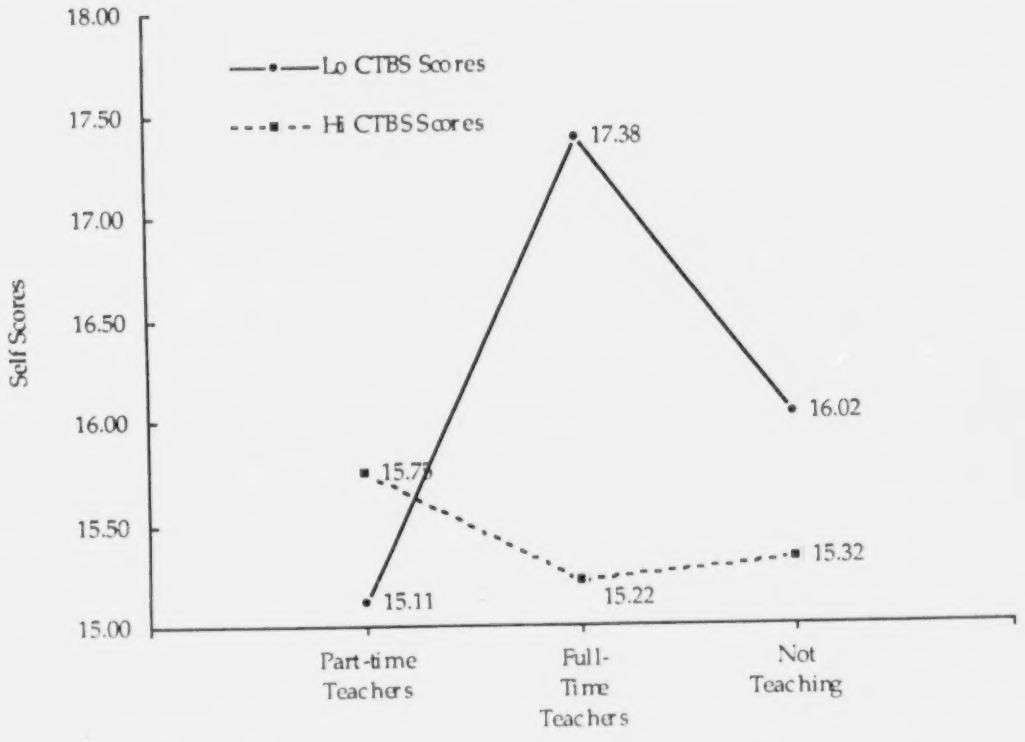


Figure 4

Dependent Variable Self: Extent of Transition x Myers-Briggs S-N

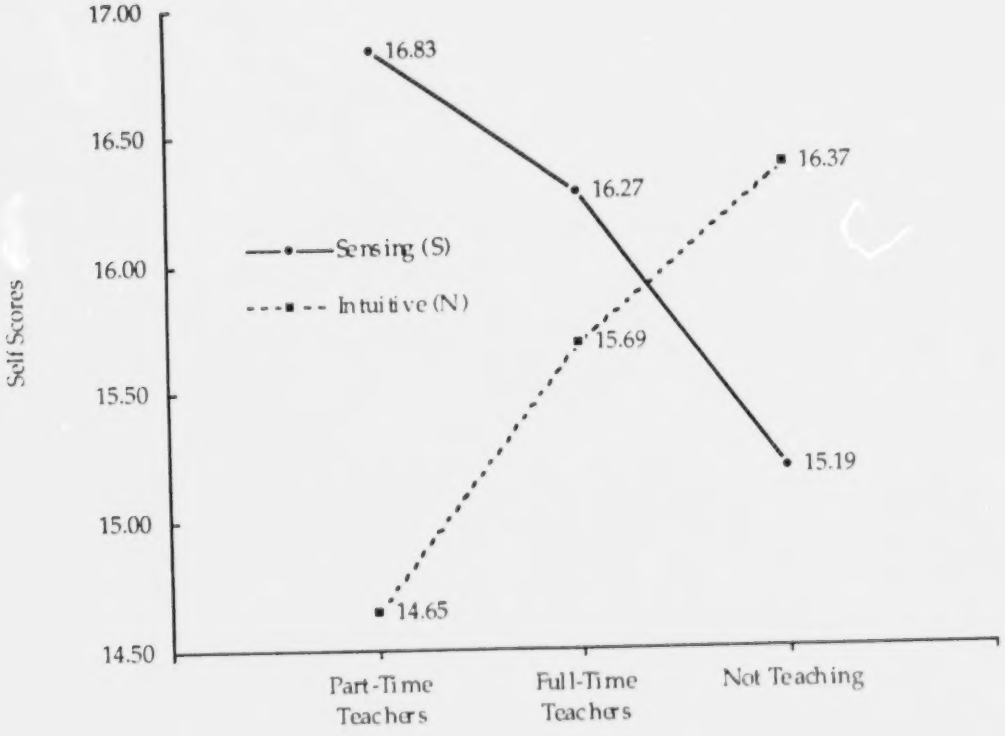


Figure 5

Dependent Variable Impact: Extent of Transition x Myers-Briggs S-N

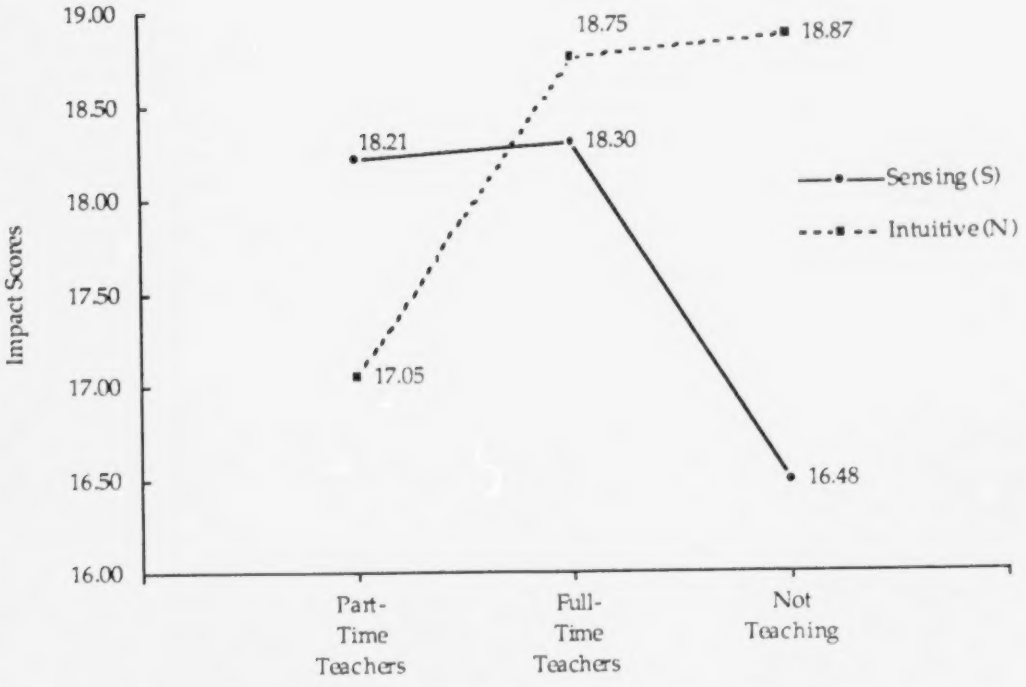


Figure 6

Dependent Variable Self: Extent of Transition x Time x Myers-Briggs J-P

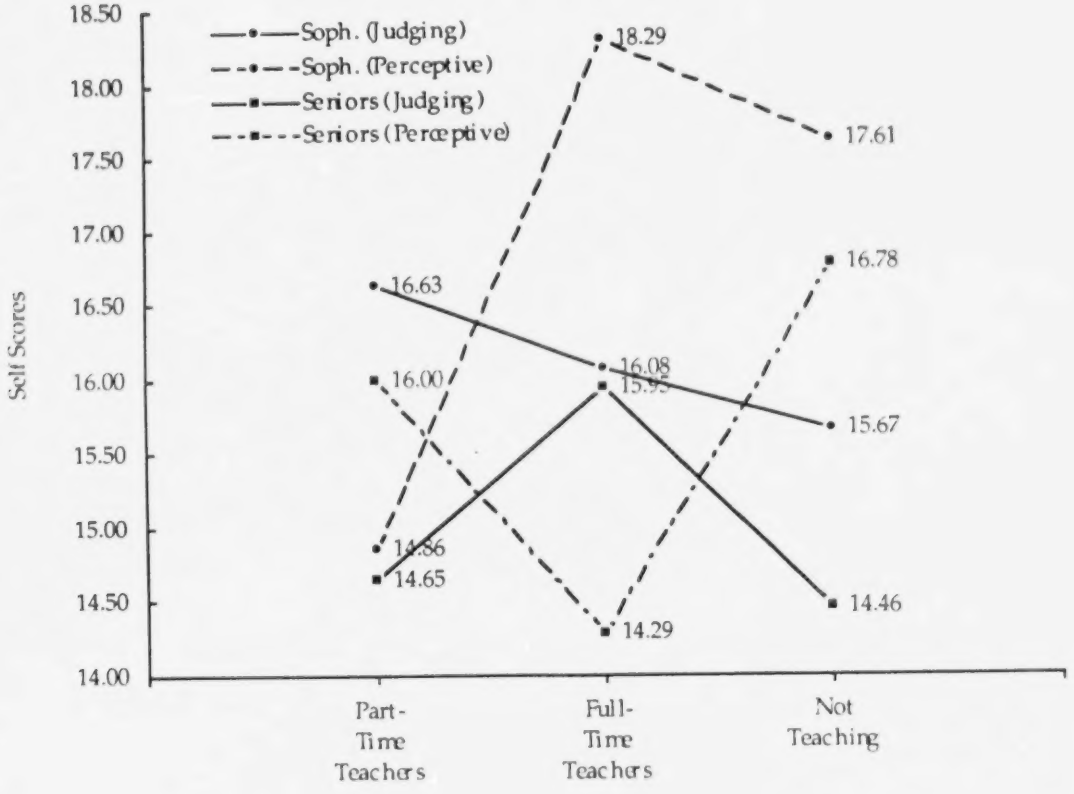
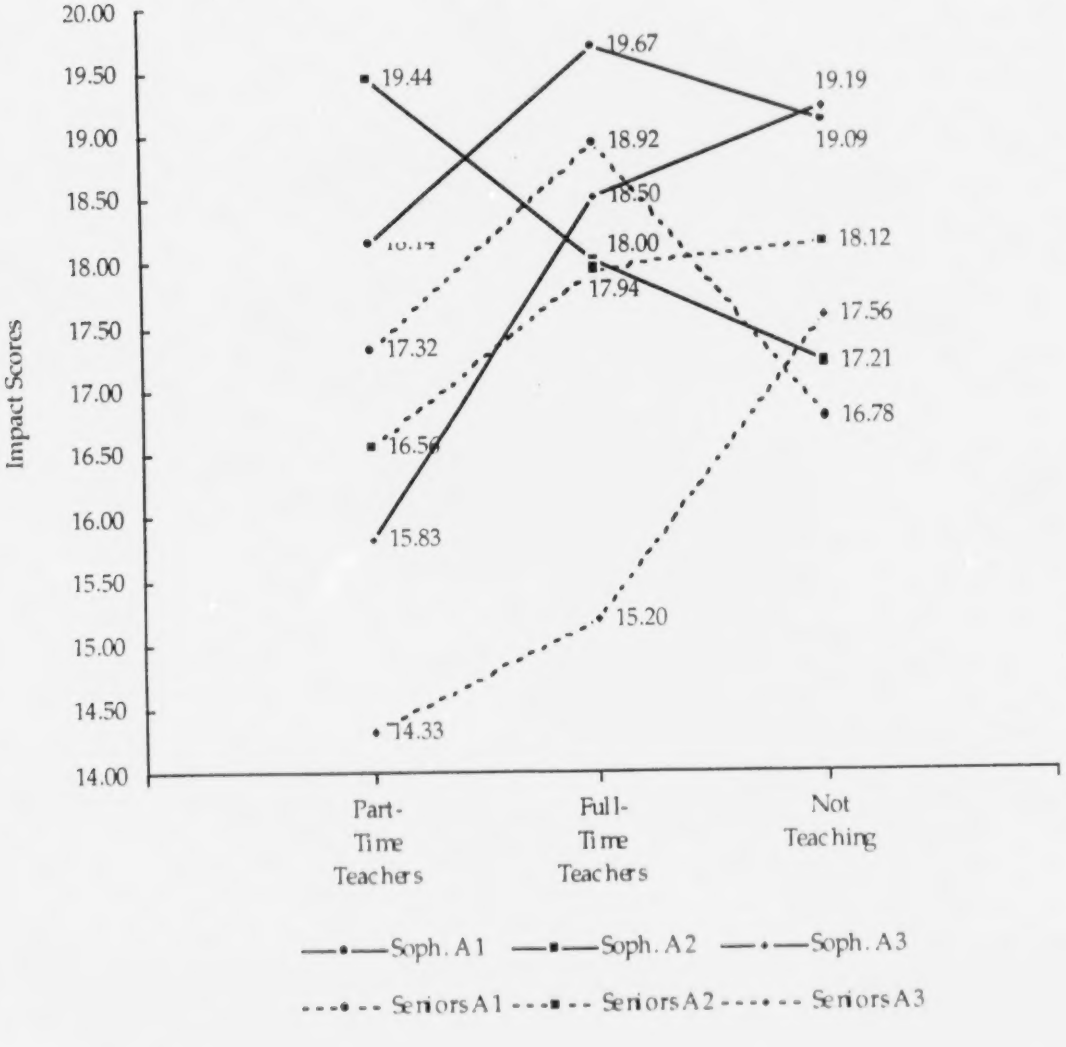


Figure 7

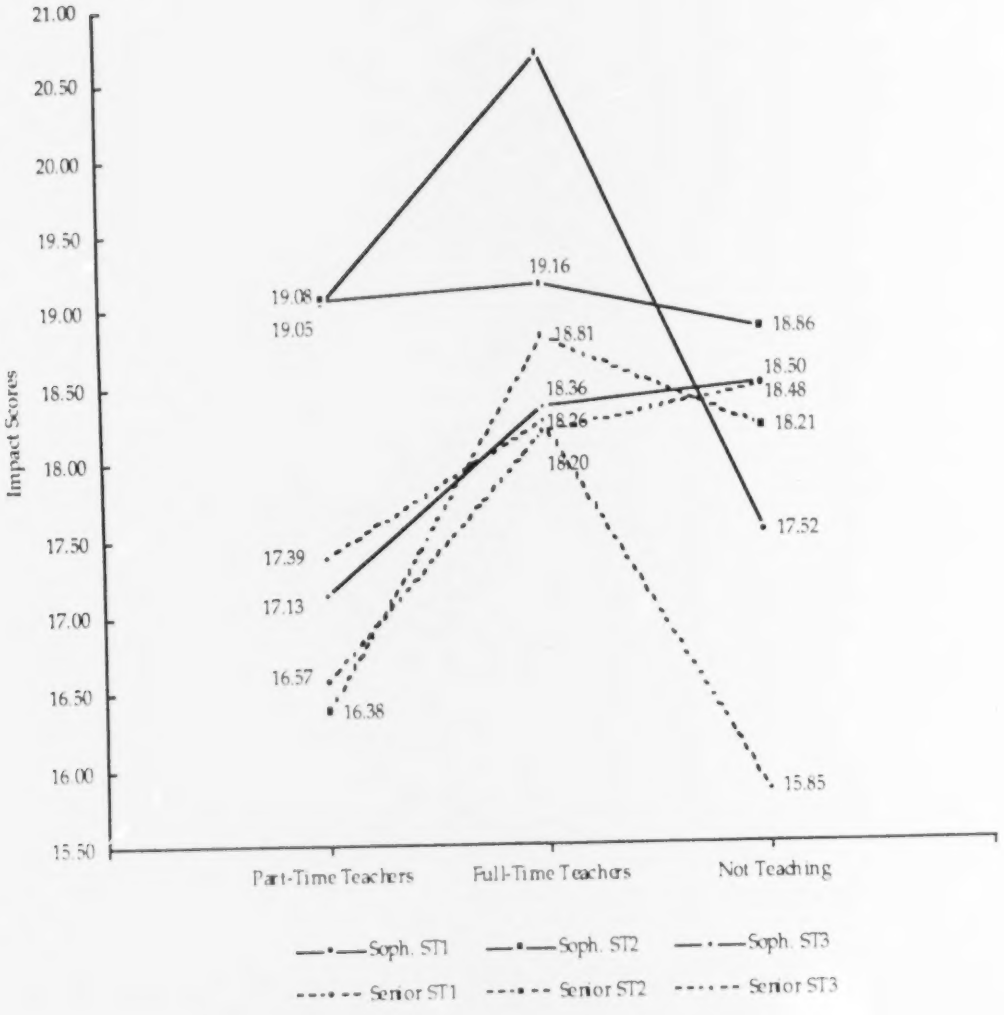
Dependent Variable Impact: Extent of Transition x Time x Assurance



A1 Very certain be teacher
A2 Certain be teacher
A3 Uncertain be teacher

Figure 8

Dependent Variable Impact: Extent of Transition x Time x Student Teaching Ratings



ST1	Student Teaching 1	Lo Ratings
ST2	Student Teaching 2	Mid Ratings
ST3	Student Teaching 3	Hi Ratings